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Vision: VIsual Software IntegratiON

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Understanding the amazingly complex biological systems sustaining life requires integrating, analyzing and understanding huge amounts of data. Computers are the tools of choice for such a task. However, profound knowledge of biology is needed for analyzing the data and learning from it. It is impossible to foresee the multitude of ways data can be visualized or computational methods can be combined to test hypotheses and often, it is assumed that in order to use computers to their full potential, scientists have to become programmers. We have explored the visual programming paradigm as a way to empower scientists with the ability to interactively program applications without having to worry about data structures or syntactical details of a programming language (even as simple and clean as Python). We have developed Vision: a software component that supports visual programming, and written adapters exposing the functionality of many Python packages in this environment. The concept of visual programming in not new however, the interpretive nature of the Python language allows for powerful and elegant solutions to many limitations witnessed in other similar tools. In this paper we will present Vision, highlight fundamental differences with other tools, and discuss benefits and challenges associated with this approach.

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